

Quality and safety of Greek traditional cheeses

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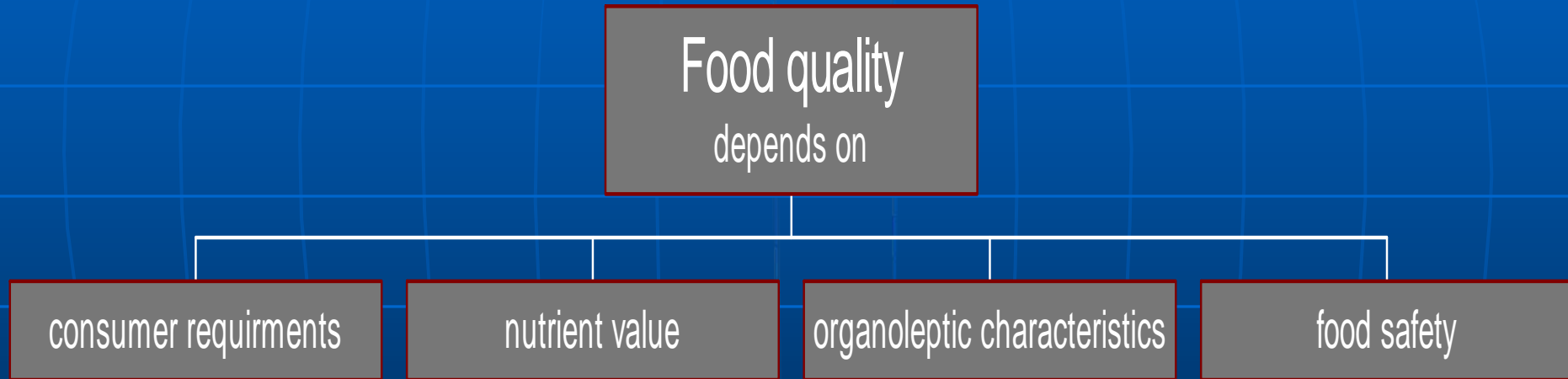
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FOOD QUALITY



Food quality and safety
From farm to fork

A. Primary Production

- Animals health

Veterinary inspections, animal health and food hygiene

- Drugs administration

(use according directives)

-Authorities

Food and Veterinary Office (FVO)

European Food Safety Authority
(EFSA)

- Animals nutrition
- Environment and animal welfare
(suitable conditions of animals live)
- Products treatment (according hygiene rules)

B. Processing

- Quality control of raw materials
- Processing
 - standardization of the processing
 - Hazard analysis critical control points (HACCP)

C. Storage

- According to the specification of product

Food hygiene

EU policy in this field is guided by seven basic principles:

- protection of human health as the main concern;
- analysis of dangers and evaluation of risks in the food industry;
- adoption of microbiological and temperature control criteria;
- drawing up of codes of good hygiene practice;
- food hygiene control by the competent authorities;
- responsibility of operators in the food sector as regards the marketing of foodstuffs

Food hygiene

- food hygiene and specific rules applicable to foodstuffs of animal origin;
- official controls on products of animal origin intended for human consumption;
- specific rules for the organisation of official controls on products of animal origin intended for human consumption;
- animal health rules governing the production, placing on the market and importation of products of animal origin intended for human consumption.

Quality products

- **PDO** (Protected Designation of Origin)

covers the term used to describe foodstuffs which are produced, processed and prepared in a given geographical area using recognized know-how.

- **PGI** (Protected Geographical Indication)

the geographical link must occur in at least one of the stages of production, processing or preparation.

Furthermore, the product can benefit from a good reputation.

- ***TSG*** (*Traditional Speciality Guaranteed*)

does not refer to the origin but highlights traditional character, either in the composition or means of production

Why have European systems for developing and protecting foodstuffs?

- To encourage diverse agricultural production
- To protect product names from misuse and imitation
- To help consumers by giving them information concerning the specific character of the products

Protected Designation of Origin (PDO) Reg. 2081/92

Protected Geographical Indication(PGI) Reg. 2081/92

Category	PDO	PGI
Cheeses	20	00
Animal origin products	01	00
Olive oils	12	10
Fruits-Vegetables-Cereals	13	06
Olives	08	01
Fisheries	01	00
Bread, pastry, cakes and other baker's wares	00	01
Natural gums and resins	02	00
Essential oils	01	00
Other agricultural products	01	00
Total	58	18



ΑΝΘΟΤΥΡΟΣ • ANTHOTIROS



ΓΑΛΟΜΥΖΗΘΡΑ ΚΡΗΤΗΣ • GALOMIZITHRA OF CRETE



ΓΡΑΒΙΕΡΑ ΚΡΗΤΗΣ • GRAVIERA OF CRETE



ΚΕΦΑΛΟΤΥΡΙ ΚΡΗΤΗΣ • KEFALOTIRI OF CRETE



ΛΑΔΟΤΥΡΙ ΜΥΤΙΑΝΝΗΣ • LADOTIRI OF MITILINI



ΜΥΖΗΘΡΑ • MIZITHRA



ΤΟΥΛΟΥΜΟΤΙΡΙ • TOULOU MOTIRI



ΓΡΑΒΙΕΡΑ ΝΑΞΟΥ • GRAVIERA OF NAXOS



ΚΑΛΑΘΑΚΙ ΛΙΜΝΟΥ • KALATHAKI OF LIMNOS



ΚΟΠΑΝΙΣΤΗ • KOPANISTI



ΚΟΡΦΟΥ • CORFU



ΚΡΑΣΟΤΥΡΙ • KRASSOTIRI



ΜΑΝΟΥΡΙ • MANOURI



ΜΕΤΣΟΒΟΝΕ • METSOVONE



ΜΠΑΤΖΟΣ • BATZOS



ΣΑΝ ΜΙΧΑΛΗ • SAN MICHALI



ΦΕΤΑ ΒΑΡΕΛΙΣΙΑ • FETA IN BARRELS



ΦΕΤΑ ΔΟΧΕΙΟΥ • FETA IN TINS



ΦΟΡΜΑΕΛΛΑ • FORMAELLA



ΤΕΛΕΜΕΣ • TELEMES



ΓΑΛΟΤΥΡΙ • GALOTIRI



ΕΛΛΗΝΙΚΗ ΓΡΑΒΙΕΡΑ • GREEK GRAVIERA



ΚΕΦΑΛΟΤΥΡΙ • KEFALOTIRI



ΚΡΑΣΟΤΥΡΙ • KRASSOTIRI



ΜΠΑΤΖΟΣ • BATZOS



ΣΑΝ ΜΙΧΑΛΗ • SAN MICHALI



ΦΕΤΑ ΒΑΡΕΛΙΣΙΑ • FETA IN BARRELS

Greek traditional cheeses

*Protected Designation of Origin (PDO)

Cheeses in brine	Soft cheeses	Semi-hard cheeses	Hard cheeses	Whey cheeses
Feta*	Anevato*	Kasseri*	Formaella of Arachova*	Manouri*
Batzos*	Galotyri*	Krassotyri	Graviera of Agrafa*	Xinomyzithra of Crete*
Kalathaki of Limnos*	Katiki of Domokos*		Graviera of Crete*	Myzithra
Sfela*	Kopanisti*		Graviera of Naxos*	Xinotyri
Touloumissio cheese (Touloumotyri)	Pichtogalo of Chania*		Kefalograviera*	
Telemes			Ladotyri of Mytilene*	
			Metsovone*	
			San-Michali*	
			Kefalotyri	

HEALTH REQUIREMENTS FOR RAW MILK PRODUCTION

Reg. 853/2004

- Raw milk must come from animals:
 - (a) that do not show any symptoms of infectious diseases communicable to humans through milk;
 - (b) that are in a good general state of health, present no sign of disease that might result in the contamination of milk and, in particular, are not suffering from any infection of the genital tract with discharge, enteritis with diarrhoea and fever, or a recognisable inflammation of the udder;
 - (c) that do not have any udder wound likely to affect the milk;
 - (d) to which no unauthorised substances or products have been administered and that have not undergone illegal treatment within the meaning of Directive 96/23/EC; and
 - (e) in respect of which, where authorised products or substances have been administered, the withdrawal periods prescribed for these products or substances have been observed.

In particular, as regards brucellosis and tuberculosis, raw milk must come from animals:

free or officially free

- of brucellosis
- of tuberculosis

However, raw milk from animals that do not meet the requirements may be used with the authorisation of the competent authority:

- (a) in the case of cows or buffaloes that do not show a positive reaction to tests for tuberculosis or brucellosis, nor any symptoms of these diseases, after having undergone a heat treatment such as to show a negative reaction to the phosphatase test;
- (b) in the case of sheep or goats that do not show a positive reaction to tests for brucellosis, or which have been vaccinated against brucellosis as part of an approved eradication programme, and which do not show any symptom of that disease, either:
 - (i) for the manufacture of cheese with a maturation period of at least two months; or
 - (ii) after having undergone heat treatment such as to show a negative reaction to the phosphatase test; and
- (c) in the case of females of other species that do not show a positive reaction to tests for tuberculosis or brucellosis, nor any symptoms of these diseases, but belong to a herd where brucellosis or tuberculosis has been detected after the checks referred to in point 2(a)(iii) or 2(b)(ii), if treated to ensure its safety.



ΑΡΙΘΜΟΣ ΚΡΟΥΣΜΑΤΩΝ ΒΡΟΥΚΕΛΛΩΣΗΣ ΣΕ ΜΙΚΡΑ ΜΗΡΥΚΑΣΤΙΚΑ ΚΑΙ ΣΕ ΑΝΘΡΩΠΟΥΣ ΜΕΤΑ ΤΟ 1993.

ΚΡΟΥΣΜΑΤΑ ΒΡΟΥΚΕΛΛΩΣΗΣ / 100.000 ΑΤΟΜΑ

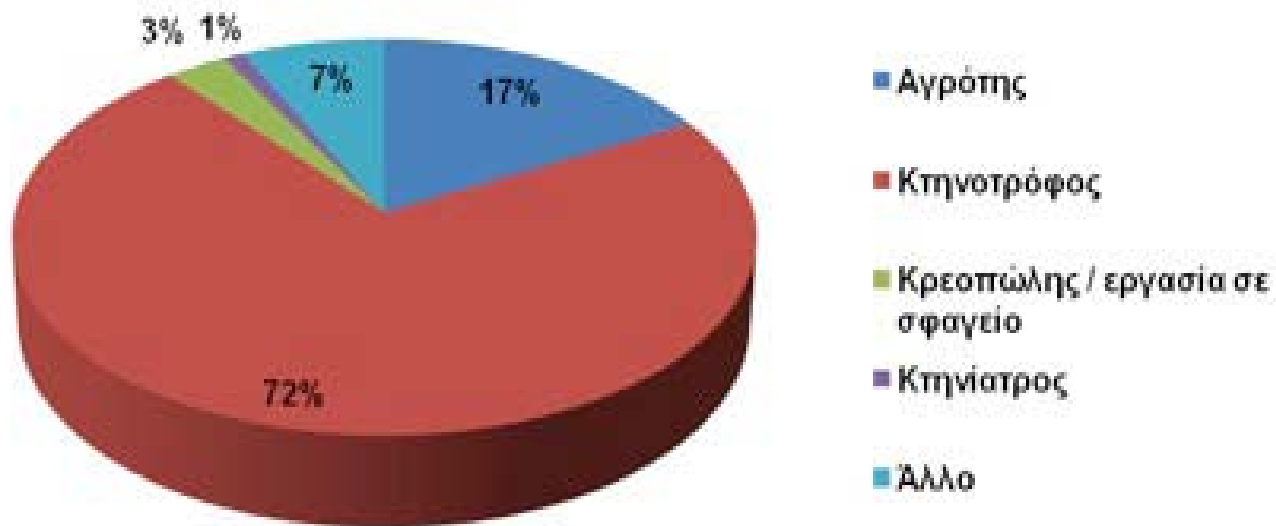
Γράφημα 1: Διαχρονική εξέλιξη της δηλούμενης απόλυτης συχνότητας της βρουκέλλωσης ανά έτος, Ελλάδα, 2005-2011.



Σημείωση: Τα δεδομένα από 1981-1997 προέρχονται από συγκεντρωτικά στοιχεία των Διευθύνσεων Υγείας, ενώ για το διάστημα 1998-2011 από το σύστημα υποχρεωτικής δήλωσης νοσημάτων του ΚΕΕΛΠΝΟ

■ ΖΩΑ ◆ ΑΝΘΡΩΠΟΙ

Κατανομή σχετικής συχνότητας δηλωθέντων κρουσμάτων βρουκέλλωσης ανά κατηγορία επαγγέλματος υψηλού κινδύνου στο σύνολο των ασθενών που δήλωσαν ότι εξασκούν επάγγελμα υψηλού κινδύνου, Ελλάδα, 2005-2011.



Greek Traditional cheeses

- Produced with raw milk
- Now with pasteurized milk

Graviere Cheese

There are no clear differences in microbiological parameters between cheese samples produced by unpasteurized and pasteurized milk

All samples were negative for *Listeria monocytogenes* and *Salmonella* spp

On day 45 th of ripening period *Staphylococcus aureus* was eliminated

The number of coliforms is more reduced in pasteurized than in unpasteurized products

Graviere produced by raw milk meets the EE regulations in microbiological criteria

Feta Cheese

The differences in microbiological parameters between cheese samples produced by unpasteurized and pasteurized milk is not clear

All samples were negative for *Listeria monocytogenes* and *Salmonella* spp

On day 45 th of ripening period *Staphylococcus aureus* was eliminated

During the ripening period the behavior of coliforms is the same in unpasteurized and pasteurized products

Conclusions

Conclusions

- Ladotyri mytilinis made with raw milk is safe as that was produced with pasteurized milk.
- Detrimental bacteria like coliforms, E. coli and staph., decreased more rapid in cheese from raw milk than in cheese from pasteurized milk.
- Olive oil acts as a good preservative which prolongs the life of the product.
- Preservation in olive oil in relation to the use of raw milk adds more added value to the product.
- Fatty acid profile of cheese seems to be not affected by preservation in olive oil.

A. Τυριά άλμης - *Cheeses in brine*

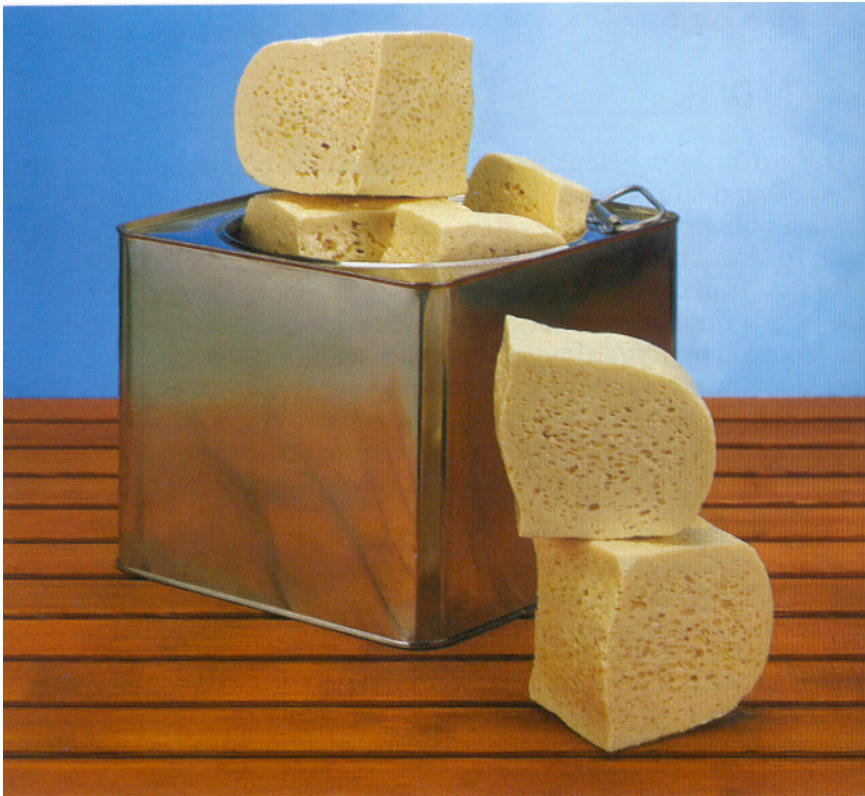


Φέτα-Feta (PDO)

- **Area of production:** In the mainland and in Lesbos island
- **Milk:** ewe's milk or mixtures with goat's milk (up to 30%)
- **Characteristics:** It is a semi-soft, white brined cheese with mildly rancid and slightly acid taste and firm and smooth texture.
- **Ripening period:** 2 months
Max moisture: 56%
Min fat in dry matter: 43%



Μπάτζος-Batzos (PDO)



- **Area of production:** Western Macedonia and Thessaly.
- **Milk:** goat's milk or ewe's milk or mixtures of both milks.
- **Characteristics:** A low fat, semi-hard, white brined cheese with a sourish and lightly piquant taste with large number of "holes" in the body.
- **Ripening period:** 3 months
- **Max moisture:** 45%
- **Min fat in dry matter:** 25%



Καλαθάκι Λήμνου-Kalathaki of Limnos(PDO)



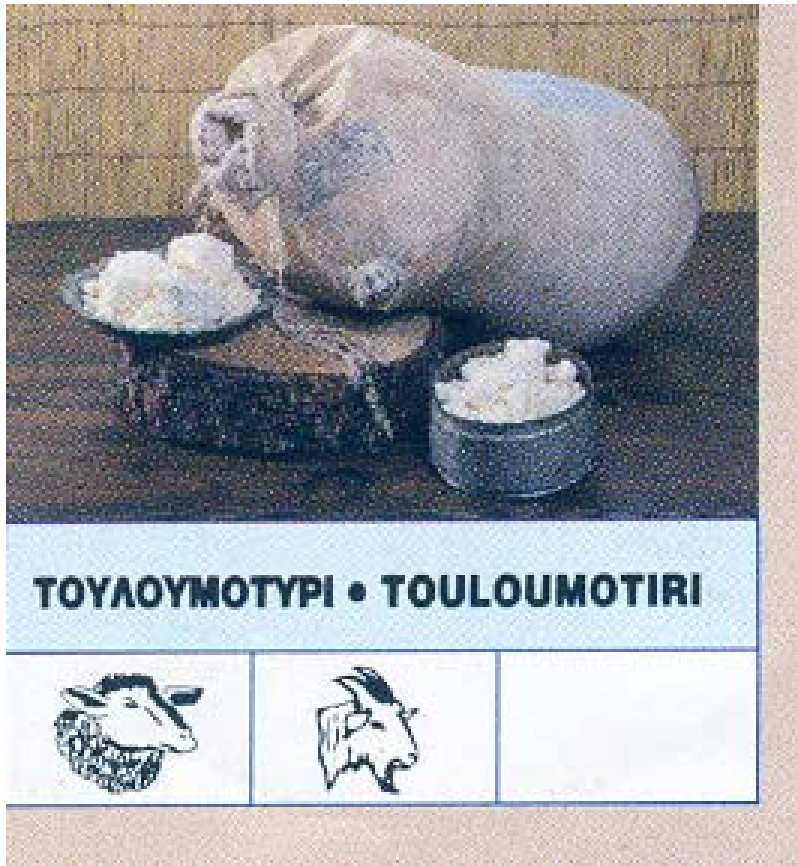
- **Area of production:** Limnos island
- **Milk:** ewe's milk or mixtures with goat's milk (up to 30%)
- **Characteristics:** It is made with a technology similar to Feta, with the exception that the curd is drained into round baskets, where it is also surface salted.
- **Ripening period:** 2 months
Max moisture: 56%
Min fat in dry matter:43%



Σφέλα-Sfela (PDO)

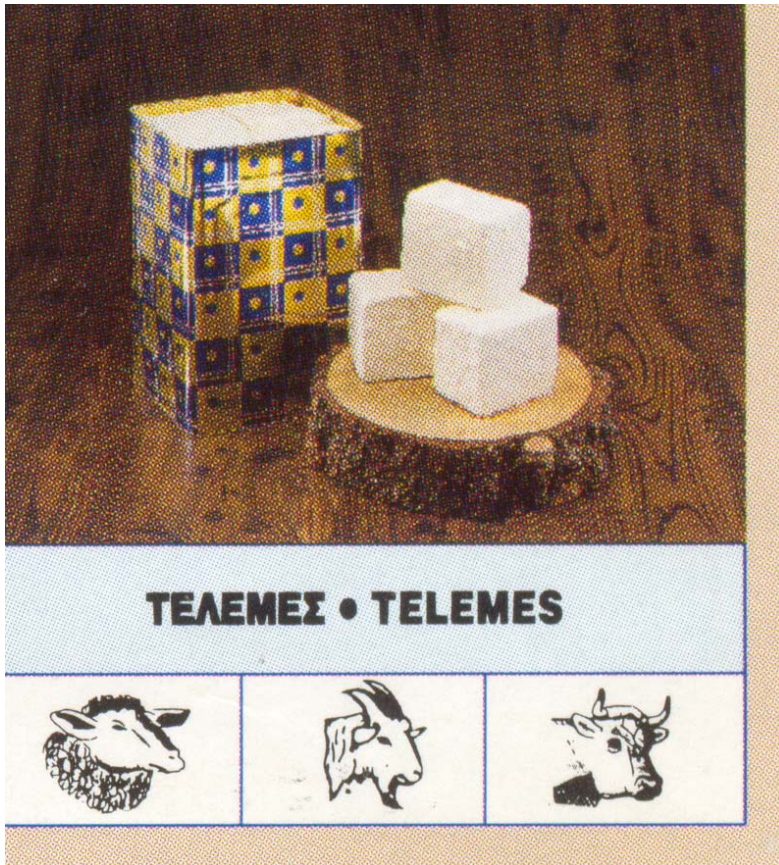
- **Area of production:** Southern Peloponessus (Messinia)
- **Milk:** raw ewe's milk or mixtures of ewe's and goat's milk
- **Characteristics:** It is a semi-hard cheese and is called often “Feta of fire” because the curd is cooked at 38-40° C.
- **Ripening period:** 3 months
Max moisture: 45%
Min Fat in dry matter:40%

Τουλουμοτύρι-Touloumotyri



- **Area of production:** The production of this cheese has been reduced, mainly due to its preservation.
- **Milk:** ewe's milk or mixtures of ewe's and goat's milk.
- **Characteristics:** It is a cheese that it ripens and it is preserved in skin bags (Touloumia).

Τελεμές-Telemes



- **Area of production:** It is produced, mainly, in the mainland.
- **Milk:** cow's milk or mixtures of all types of milks
- **Characteristics:** It is a soft and pleasant in taste white brined cheese. It differs from feta in the procedure of draining and salting.
- **Ripening period:** 2 months

B. Μαλακά τυριά-Soft cheeses

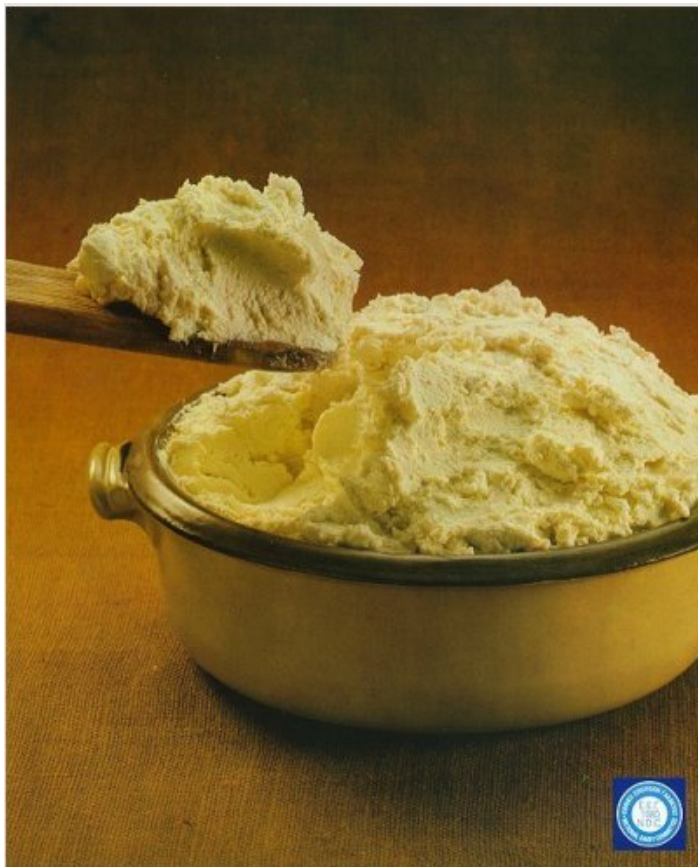
Ανεβατό-Anevato (PDO)



- **Area of production:** Western Macedonia
- **Milk:** ewe's or goat's milk or mixtures of both milks
- **Characteristics:** It is a spread type cheese with a pleasant taste, especially the product made from goat's milk.
- **Ripening period:** 2 months
Max moisture: 60%
Min Fat in dry matter:45%

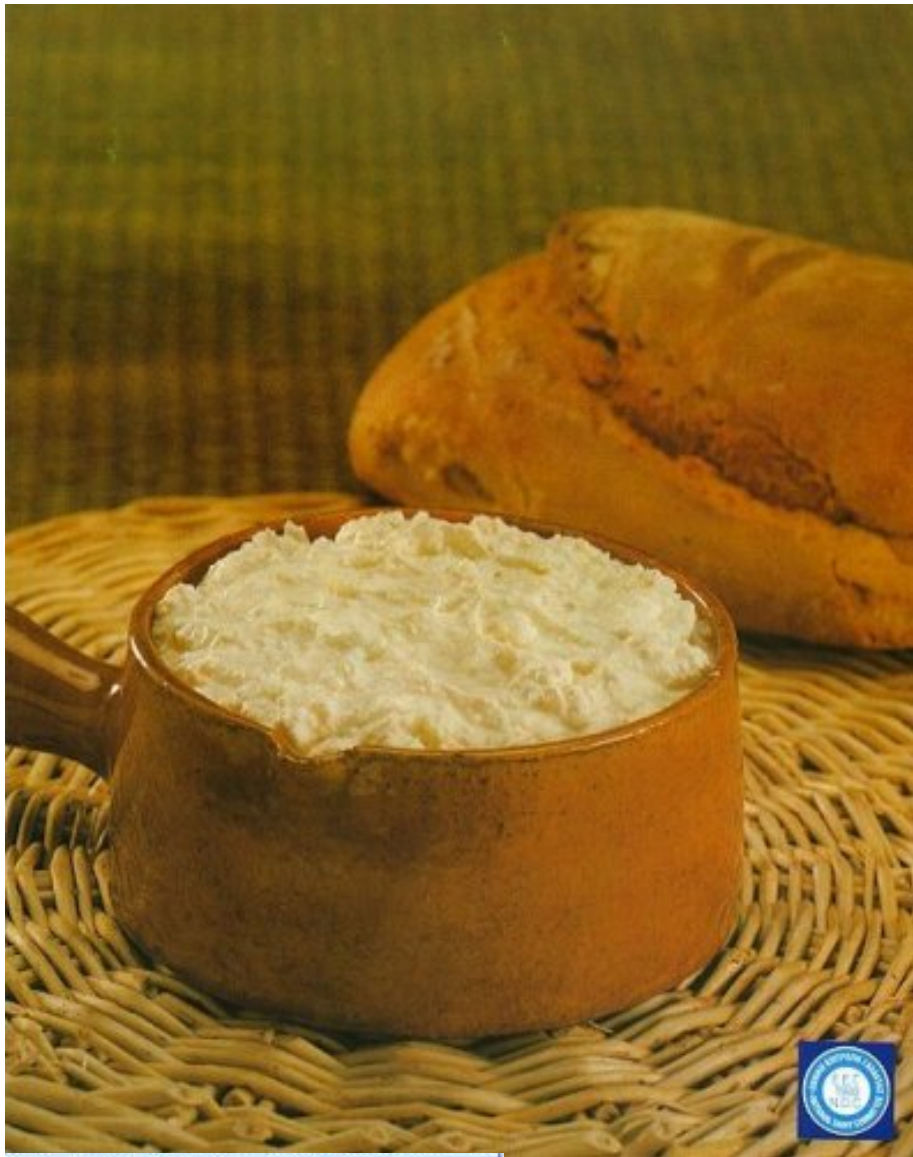


Κοπανιστή-Κορανιστή(PDO)



- **Area of production:** In the islands of Aegean sea, Cyclades.
- **Milk:** cow's milk or mixtures with ewe's and goat's milk.
- **Characteristics:**It is a soft cheese with a characteristic peppery taste.
- **Ripening period:** 30-40 days
Max moisture: 56%
Min fat in dry matter:43%





Γαλοτύρι-Galotiri (PDO)

- **Area of production:** Epirus and Thessaly
- **Milk:** ewe's milk or goat's milk or mixtures of ewe's and goat's milk
- **Characteristics:** It is a soft cheese with sourish taste
- **Ripening period:** 2 months
Max moisture: 75%
Min fat in dry matter:40%



Κατίκι Δομοκού

Katiki of Domokos(PDO)



- **Area of production:** Domokos area.
- **Milk:** goat's milk or mixture with ewe's milk
- **Characteristics:** It is a soft cheese

Max moisture:75 %

Min fat in dry matter:40%



Πηχτόγαλο Χανίων- Pichtogalo of Chania(PDO)



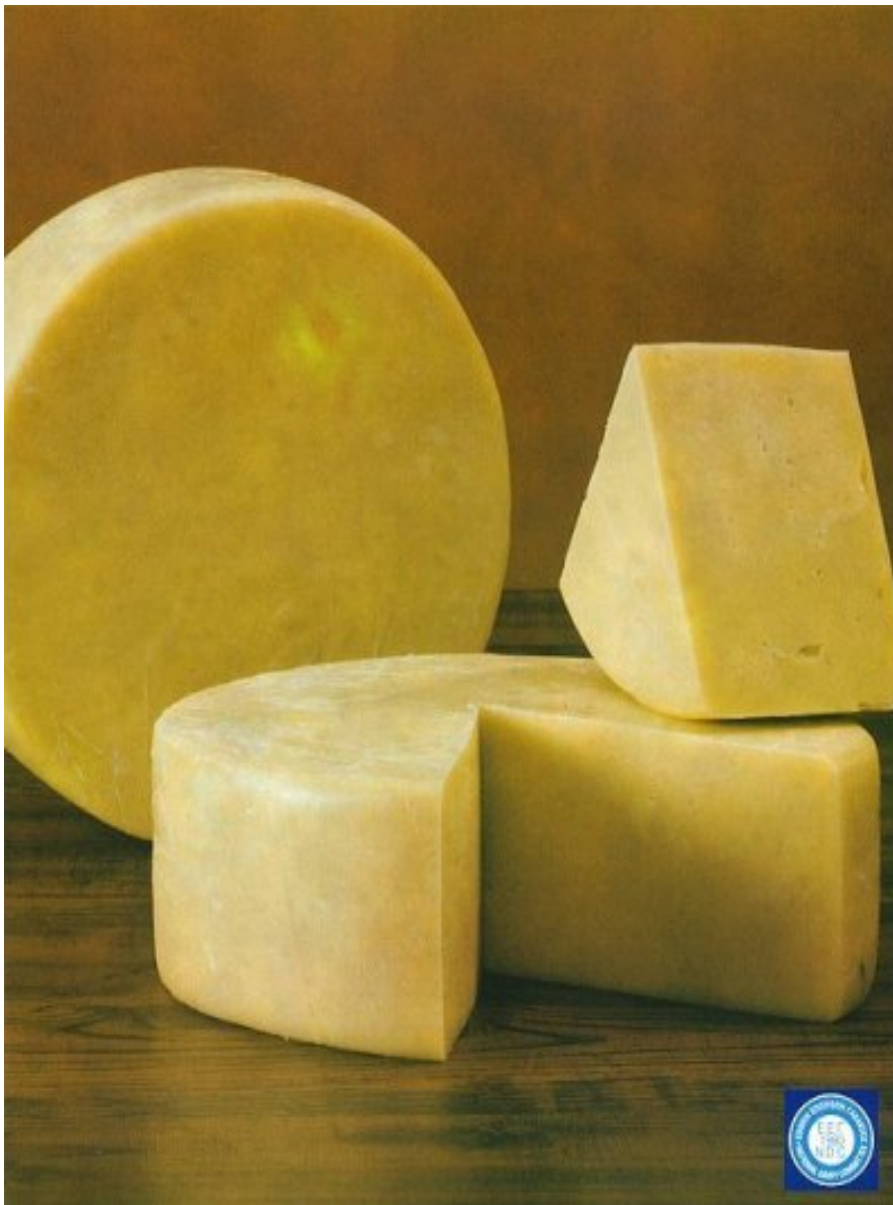
- **Area of production:** Chania (Crete)
- **Milk:** ewe's milk or goat's milk or mixtures of them
- **Characteristics:**It is a soft spreadable cheese.

Max moisture: 65%

Min fat in dry matter:50%



C. Ημίσκληρα τυριά - *Semi-hard cheeses*



Κασέρι-Kasseri(PDO)

- **Area of production:** Macedonia, Thessaly, Xanthi (Thrace) and Lesvos
- **Milk:** ewe's milk or mixtures of ewe's and goat's milk(up to 20%)
- **Characteristics:** It is a “pasta filata” type of cheese with a pleasant flavor.
- **Ripening period:** 3 months

Max moisture:45 %

Min fat in dry matter:40%



Κρασοτύρι-Krasotyri



- **Area of production:** Kos island, Dodekanisos
- **Milk:** ewe's milk or goat's milk or mixtures of both
- **Characteristics:** It has slightly sour taste and organoleptic properties of wine sediments, where it is put after ripening.
- **Ripening period:** 20-30 days

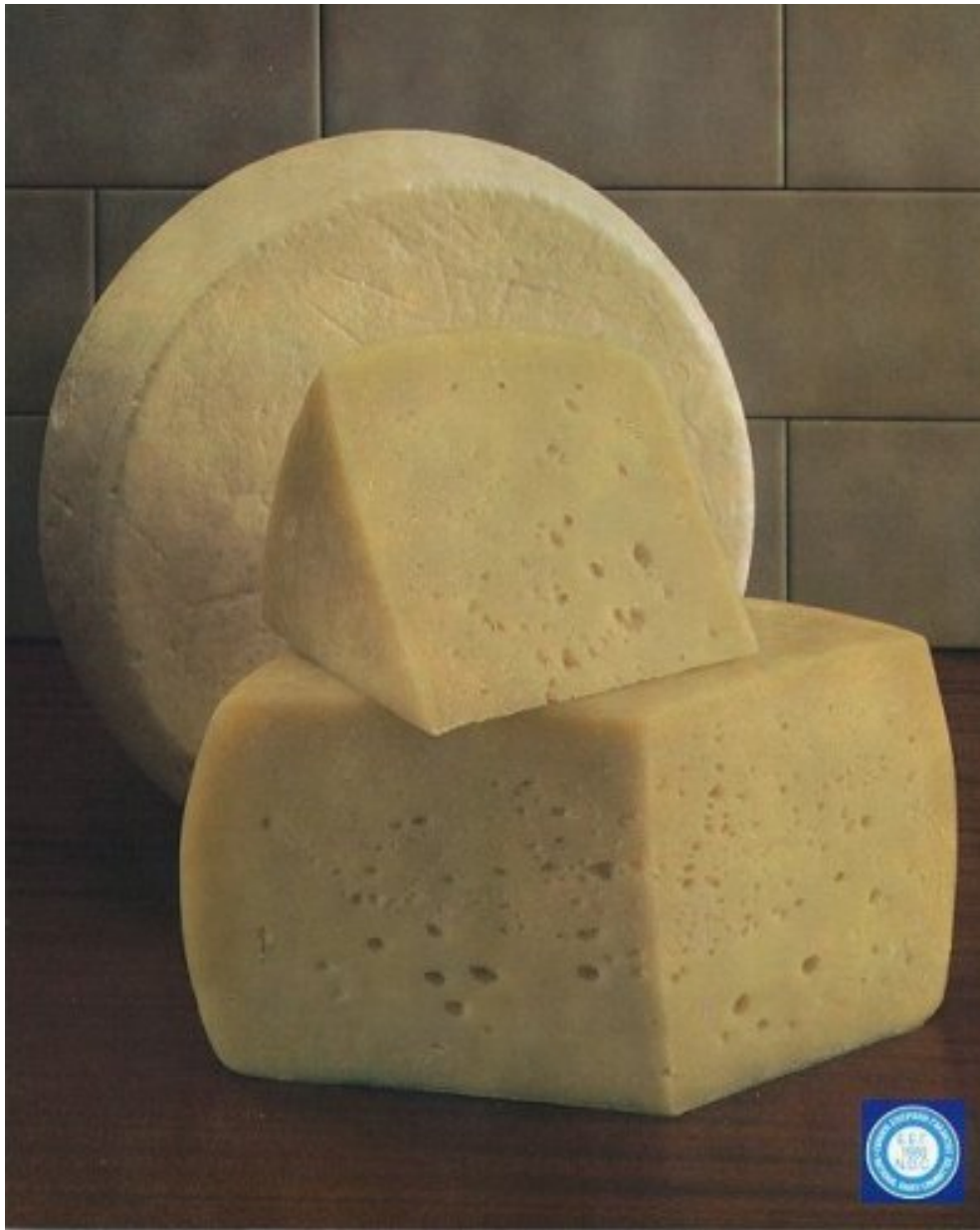
D. Σκληρά τυριά - Hard cheeses

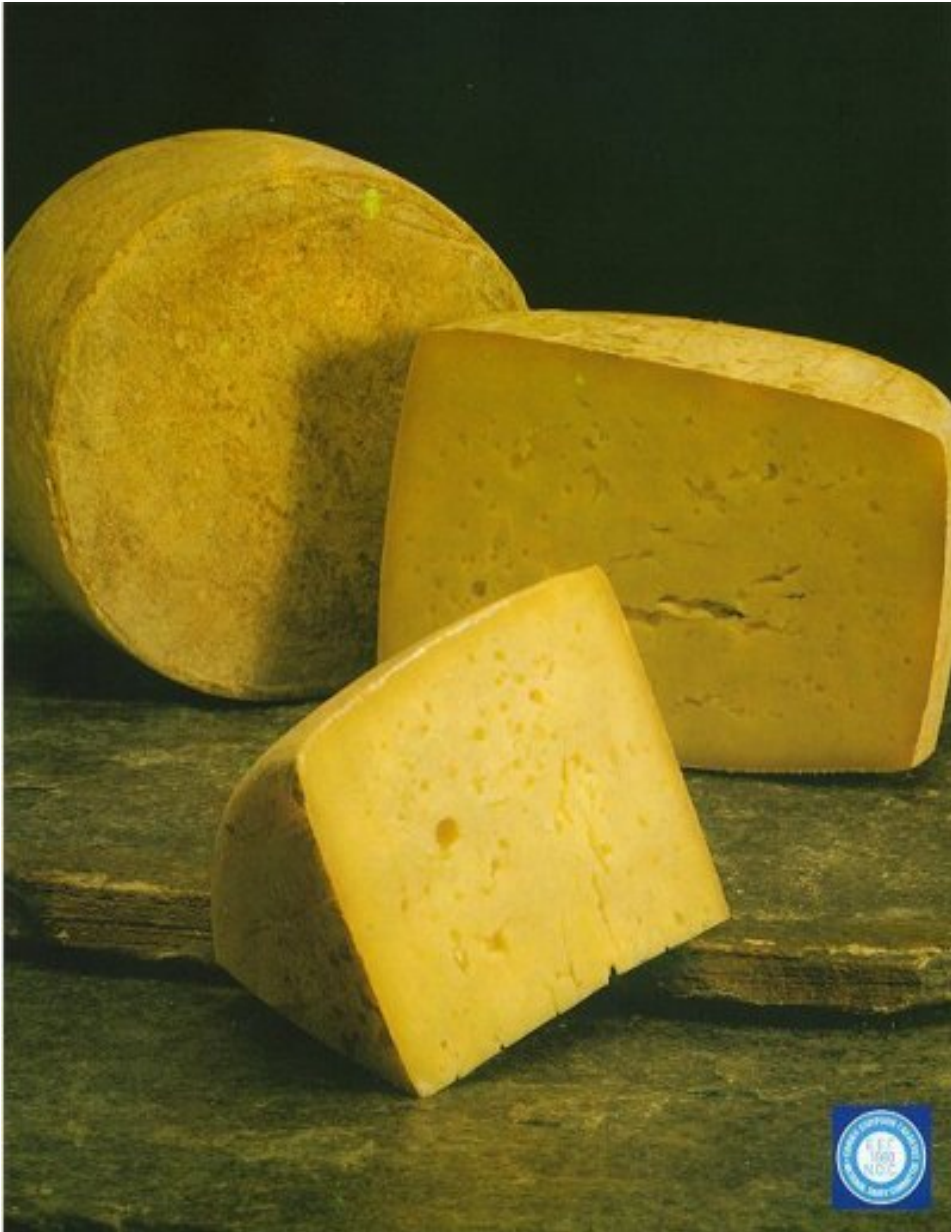
Κεφαλογραβιέρα- Kefalograviera(PDO)

- **Area of production:** Mountainous Greece
- **Milk:** ewe's milk or mixtures of ewe's and goat's milk (up to 10%)
- **Characteristics:** It is a hard cheese, with a firm body and many holes, mild to medium piquant flavor and colour nearly white to slight yellow.
- **Ripening period:** 3 months

Max moisture:40 %

Min fat in dry matter:40%





Graviera of Crete (PDO)

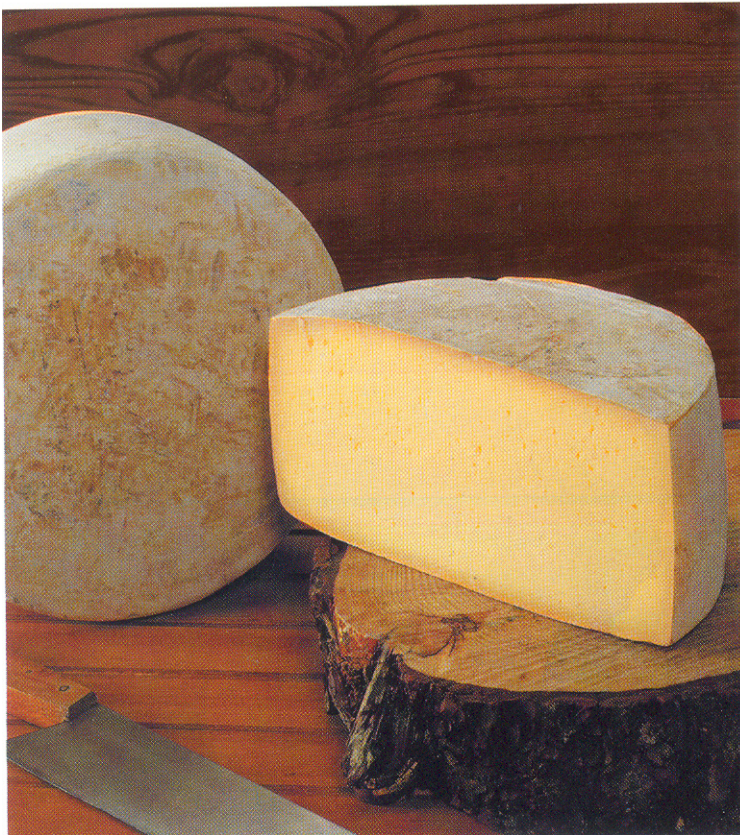
- **Area of production:** Crete
- **Milk:** ewe's milk or mixtures of ewe's and goat's milk (up to 20%)
- **Characteristics:** It is a hard cheese with holes in the body.
It is distinguished for its pleasant aroma and its fine taste.
- **Ripening period:** 3 months

Max moisture: 38%

Min fat in dry matter: 40%



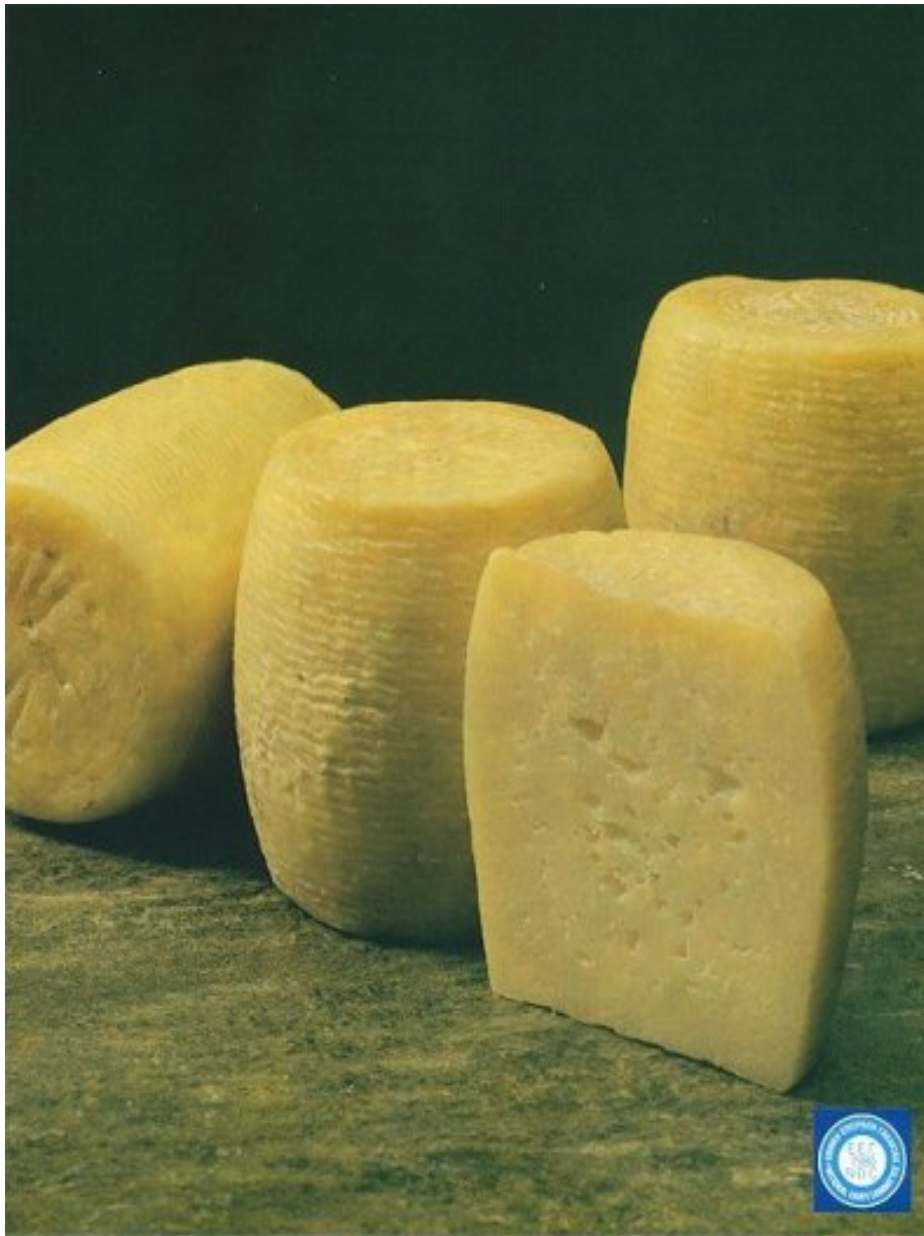
Γραβιέρα Νάξου- Gravera of Naxos(PDO)



- **Area of production:** Naxos island
- **Milk:** cow's milk or mixtures of ewe's and goat's milk(up to 20%)
- **Characteristics:** It is a hard cheese **Ripening period:** 70-80 days

Max moisture: 38%

Min fat in dry matter: 40%



Λαδοτύρι Μυτιλήνης- Ladotiri of Mitilini (PDO)

- **Area of production:** Lesvos island
- **Milk:** ewe's milk or mixtures of ewe's and goat's milk (up to 30%)
- **Characteristics:** The cheese is preserved in olive oil.
- **Ripening period:** 3 months

Max moisture: 38%

Min fat in dry matter:40%



Φορμαέλλα Αράχωβας Παρνασσού

Formaella of Parnassos(PDO)



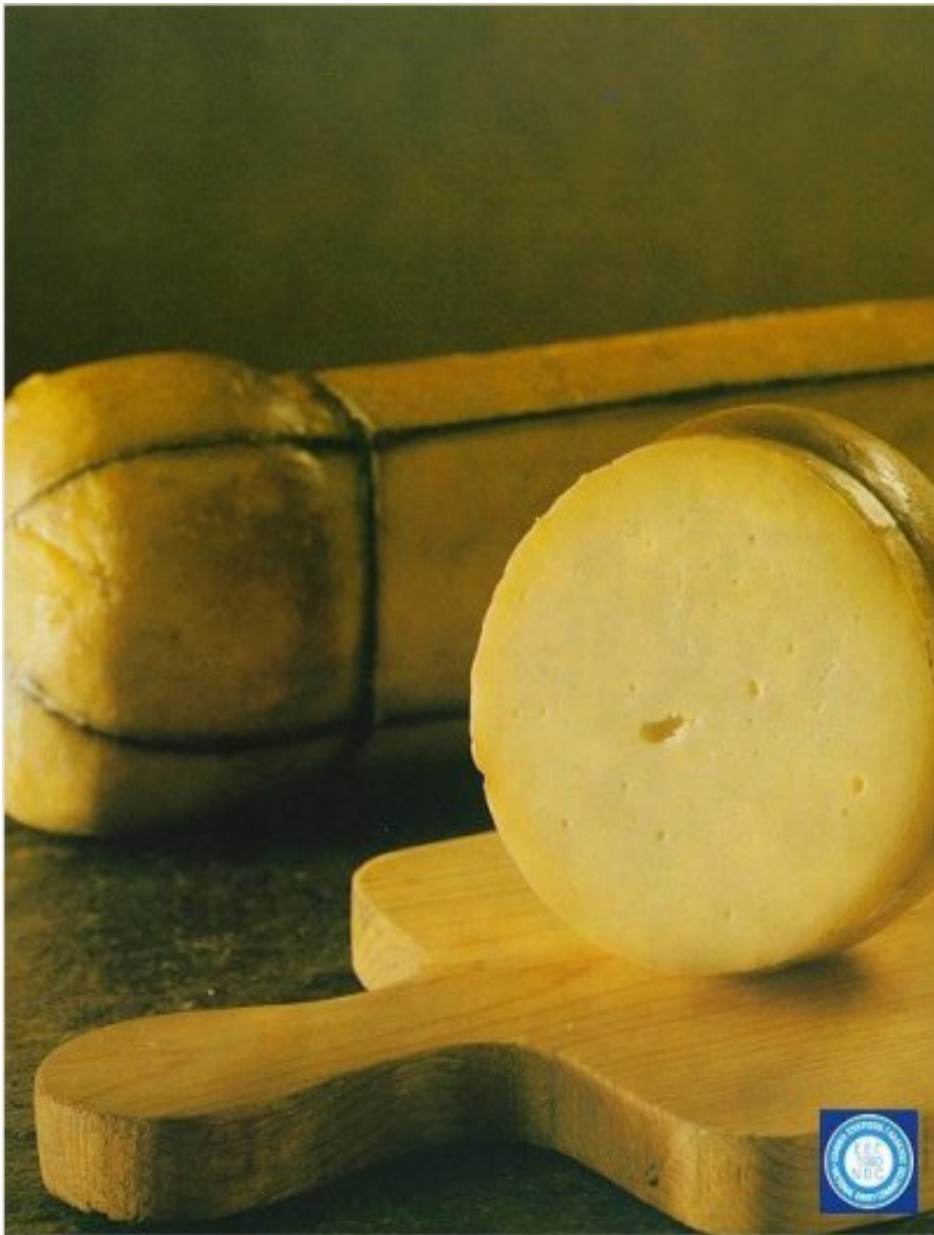
- **Area of production:** Parnassos mountainous area
- **Milk:** goat's or ewe's milk or mixtures of both milks
- **Characteristics:** It is a semi-hard cheese with a pleasant taste and favor.

Max moisture: 50%

Min fat in dry matter:40%



Μετσοβόνε- Metsovone(PDO)



- **Area of production:** Metsovo (Epirus)
- **Milk:** cow's milk or mixtures with ewe's and goat's milk (up to 20%)
- **Characteristics:** It is a hard smoked cheese of pasta filata type.
- **Ripening period:** 3 months
Max moisture: 38%
Min fat in dry matter:40%



Σαν Μιχάλη-San Michali(PDO)



- **Area of production:** Siros island
- **Milk:** cow's milk
- **Characteristics:** It is a hard cheese with strong flavor
- **Ripening period:** 4 months

Max moisture: 40%

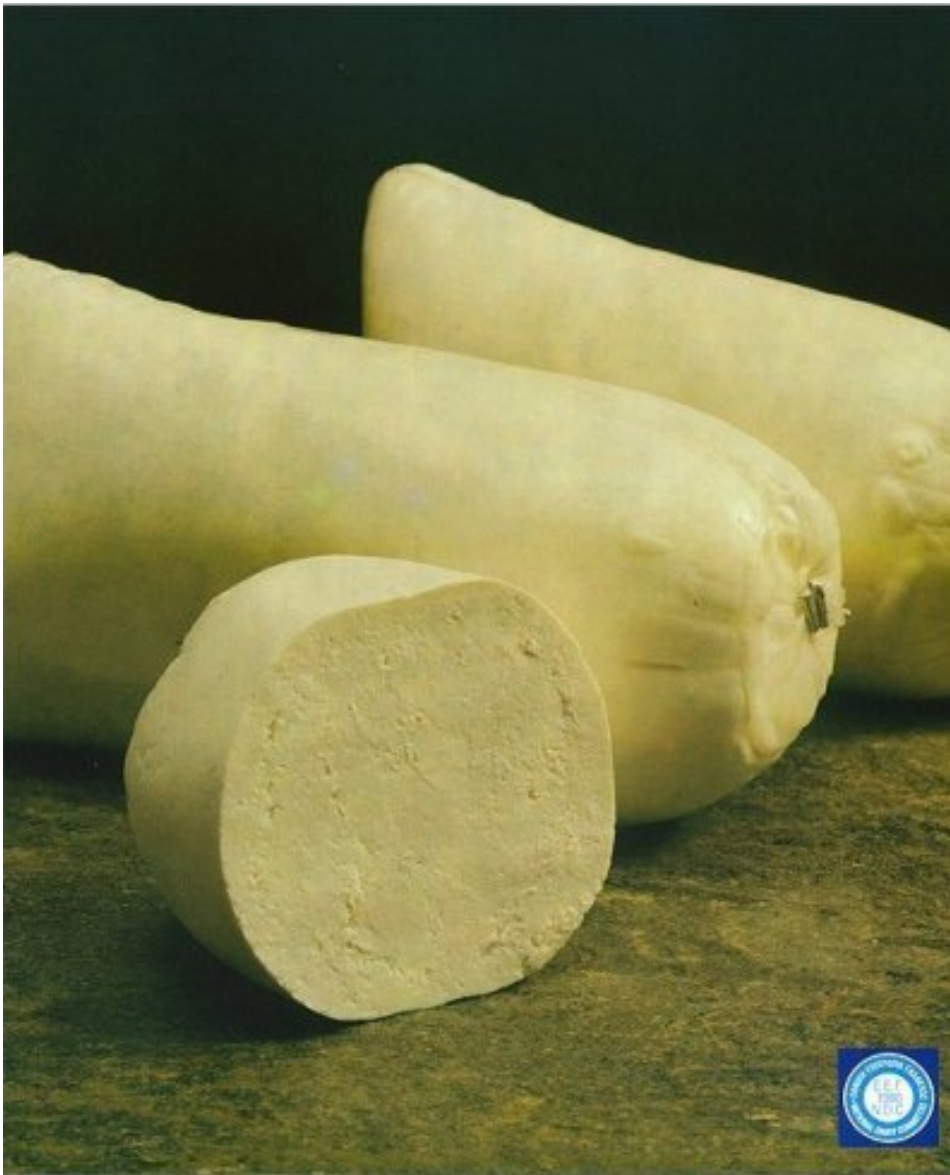
Min fat in dry matter:36%

Κεφαλοτύρι-Kefalotyri



- **Area of production:** It is produced in various areas of Greece.
- **Milk:** ewe's or goat's milk or mixtures of them
- **Characteristics:** It is characterized by high hardness, salty taste and strong flavor
- **Ripening period:** 3 months

Ε. Τυριά τυρογάλακτος - *Whey cheeses*



Μανούρι- Manouri(PDO)

- **Area of production:** Central and western Macedonia and Thessaly.
- **Characteristics:** It is a whey cheese with a delicate texture and superior sensory quality

Max moisture: 60%

**Min fat in dry
matter:**70%



Ευνομυζήθρα Κρήτης-Xinimyzithra of Crete(PDO)



- **Area of production:** Crete
- **Characteristics:** It is made from the whey obtained during the production of Kefalotyri and Graviera from ewe's and goat's milk
- **Ripening period:** 2 months

Max moisture: 55%

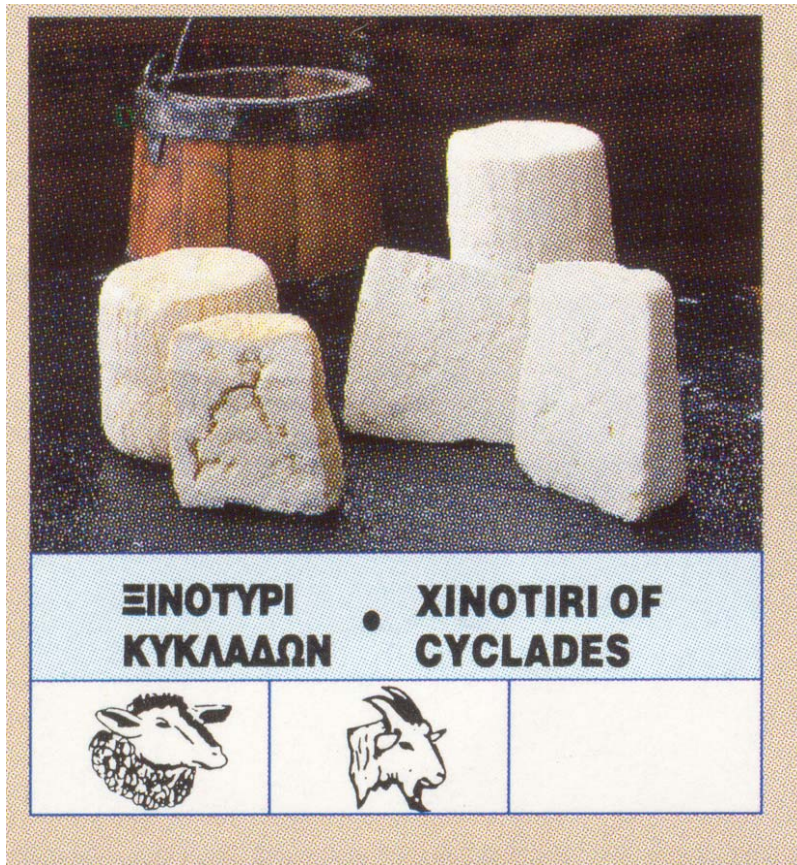
Min fat in dry matter: 45%

Μυζήθρα-Myzithra



It is a traditional whey cheese made by heating the whey at 88-92°C

Ξυνοτύρι-Χινότυρι



It is the cheese type that is made from the whey obtained during the production of butter with a pleasant and salty taste. Ripening period: 2-3 months

Σας ευχαριστώ για την προσοχή σας!

Thank you for your attention!